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Filed : April 9, 2004

REMARKS

In the Final Office Action mailed June 25, 2008 the Examiner rejected all pending claims, namely, Claims 1-27. In response, the Applicants have filed a Request for Continued Prosecution in connection with this Response. The Applicants request entry of the amendments listed above and consideration of the following remarks. The only remaining rejection are obviousness type rejections. Each rejection is discussed below in relation to each independent claim. Reconsideration is respectfully requested. Prior arguments regarding the lack of teaching and motivation to combine are repeated.

Claims 1-13 Rejected Under 35 U.S.C. § 103

The Examiner rejected Claims 1-13 under 35 U.S.C. § 103 as being unpatentable over the three way combination of the Takenouchi reference (JP 06-338793) in view of the Kapetanic reference (U.S. Patent No. 6,163,223) in view of the Hji pieris reference (U.S. Patent No. 5,237,291).

Using the above-referenced rejection, the Examiner argued that it would be obvious to combine the Takenouchi reference, the Kapetanic reference, and the Hji pieris reference. The Applicants disagree and request reconsideration in view of the amendments set forth above. Each claim group is discussed below.

Claims 1-7

The Applicants have amended Claim 1 to require that 1) the frequency shifting occur after the switching, 2) the frequency shifting occurs with every switching of the switch and 3) that the output of the system comprise a single output.

Shifting the frequency after the switching operation reduces cross-coupling from one frequency to another at the output. The frequency shift operation provides isolation between output frequencies node and the VCO. The Examiner relies on the Kapetanic reference to teach shifting the signal. However, the Kapetanic reference teaches shifting the signal as part of the

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switch and as such, switching using the switch 144 occurs after the frequency shift operation. The drawback to switching after the frequency shift, as taught by the Kapetanic reference, is that cross coupling will occur in the switch. Thus, the method of Claim 1 has advantages over the method proposed by the Kapetanic reference.

In addition, even if the Examiner asserts that Figure 1 of the Kapetanic reference as teaching switching before the frequency shift, the Applicants respond that there are 3 different outputs from system of Figure 1 of the Kapetanic reference. In particular, the Kapetanic reference teaches multiple outputs (bottom of Figure 1). To reduce the output to a single output, as is now required by Claim 1, additional switching must occur. As such, the Kapetanic reference does not teach a single output and does not teach switching before the frequency shift. In addition, neither the Takenouchi reference nor the Hjiipieris reference teach frequency shifting before the switch. As such, the Applicants submit that the prior art does not teach this claim limitation.

Claim 1 has also been amended to require that for every switch operation, a frequency shift operation is mandated. Support for this limitation is found in Figure 5A which shows the single controller output concurrently controlling the switch 550 and the divider / multiplier 554. The switch 550 is located before the divider multiplier 554. Further support is found at paragraph [049], which reads as follows:

Thus, when the switch 412 is controlled to provide the signal S_{f1} from the signal generator 404A at a frequency f_1 to the frequency scaler, then concurrently, the control signal provided by the controller 408 to the scaler 416 forces the scaler to modify the frequency of the signal S_{f1} by a matching scaling factor to thereby generate an output signal at a desired output frequency.

The Applicants propose that the cited prior art does not teach that every VCO change (due to switch selection) must be met with a frequency shift. This is a significant difference which is rooted in the basic design differences between the system of the present application and that of the cited prior art. Frequency shifting in the system of Claim 1 occurs to maintain isolation between the VCO and the single output. The Kapetanic reference does not teach this limitation.

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Allowance of Claim 1 is requested. Claims 2-7, which depend from Claim 1, are submitted as being allowable due to their dependence on allowable Claim 1.

Claim 8-13

The Applicants have amended Claim 8 as shown above. The comments set forth above in connection with Claim 1 are hereby repeated and incorporated for Claim 8. The amendments to Claim 8 require that the method of Claim 8 perform a frequency modification for each and every switch operation. Thus, in contrast to the prior art cited by the Examiner, every time a different VCO is selected (through switch selection), a frequency modification occurs. This limitation is not taught by the Kapetanic reference, which is the reference relied on by the Examiner for frequency multiplication and division. As stated above, since the system of the Kapetanic reference (Figure 1) teaches three different signal paths, it is not required to shift the frequency when changing to a different VCO output. Elements 2, 4, and 22 are the VCO. Similarly, neither the Takenouchi reference nor the Hjiipieris reference require that for every change in VCO output, a frequency modification must occur. For this reason, the Applicants submit that Claim 8 is allowable.

Claim 8 also requires that the frequency modified signal be output on a single output and that the frequency modification occur after the switch. In particular, Claim 8 includes the following limitation:

for each and every switch operation selectively changing the modification to ~~modifying~~ the frequency of the signal output from the switch with the frequency modification module to create a frequency modified signal; and
outputting the frequency modified signal on a single output.

This limitation requires that the switch output be subject to frequency modification (hence a different frequency modification occurs after each switching operation) and that the frequency modified signal be presented on a single output. The Takenouchi reference teach a single output, but the switch is the last element, so frequency modification can not occur after the switch of the Takenouchi reference. The Kapetanic reference teaches multiple outputs (Figure 4

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and column 3, line 55) and that the switching, element 144, occur after the frequency multiplication and division in elements 136, 146, and 140. In fact, in the Kapetanic reference, frequency modification occurs right in the middle of the switch. The Hjiipieris reference is not relied on by the Examiner for either teaching. For this reason, the Applicants submit that Claim 8 is allowable. Claims 9-13, which depend from independent Claim 8, are submitted as being allowable based on their dependence from and allowable independent claim.

Claims 14-18, 21 and 25-26 Rejected Under 35 U.S.C. § 103

The Examiner rejected Claim 14-18, 21 and 25-26 under 35 U.S.C. § 103 as being unpatentable over the three way combination of the Takenouchi reference (JP 06-338793) in view of the Kapetanic reference (U.S. Patent No. 6,163,223) in view of the Lemay reference (U.S. Patent No. 6,321,074).

Claims 14-21

In response, the Applicants repeat and incorporate the comments and arguments set forth above in connection with Claims 1-13. With regard to Claim 14, the only independent Claim from this claim group, the Applicants request reconsideration in view of the amendments to Claim 14 and the following comments.

Claim 14 has been amended to include the following limitations as shown by underline.

a frequency modification device configured to receive the switch output after switching and modify the frequency of the switch output to a desired output frequency to create an output signal, wherein for every change in the switch output a frequency modification change also occurs;
a single output configured to output the output signal.

As amended, Claim 14 requires that the frequency modification occur after switching. In addition, Claim 14 requires that a single output provides the output signal and that for every switch output change, a frequency modification change also occurs. As set forth above, these

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limitations are not taught by the prior art. The Applicant relies on the arguments and cites into the prior art as are set forth above. Reconsideration is requested.

Claims 25-26

Claims 25-26 depend from independent Claim 22, which is discussed below. Claims 25-26 are submitted as being allowable for the same reasons as are set forth below.

Claims 22-23 and 27 Rejected Under 35 U.S.C. § 103

The Examiner rejected Claim 22-23 and 27 under 35 U.S.C. § 103 as being unpatentable over the three way combination of the Takenouchi reference (JP 06-338793) in view of the Kapetanic reference (U.S. Patent No. 6,163,223). Claim 22 is an independent claim and Claims 23 and 27 depend from Claim 22. Claim 22 has been amended as shown below.

a frequency modification device configured to, responsive to a control signal, increase or decrease the frequency of a signal output from the switch to either the third frequency or the fourth frequency wherein for every change in switch output, an increase or decrease in the frequency of a signal output from the switch occurs to create a frequency modified signal; and

This limitation requires that the system of Claim 22 have the frequency modification occur after the switch. The Applicants submit that none of the prior art references teach that the frequency modification occur after switching. Clearly the Takenouchi reference does not teach frequency modification after the switch element 42 of Drawing 1. Likewise, and as discussed above, the Kapetanic reference does not teach the frequency modification occur after switching. Looking at blocks 134, 96, and 56 of Figure 1 of the Kapetanic reference, it is clear that switching occurs, via switch 144, 106, 66 after the frequency modification. This switching arrangement will completely pollute the output with harmonics and cross-coupling and this would be appreciated by one of ordinary skill in the art. The Applicants also note that this is the reason that the system of the Kapetanic reference must have 3 different and duplicative

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processing paths. The system as claimed has technical advantages over the system of the Kapetanic reference and the Kapetanic reference does not teach the claimed elements. Likewise, neither cited reference teaches that for every change in a switch output, a change in frequency modification must occur. If the Examiner asserts that these cited prior art reference make such a teaching, the Applicants request point cites into the references where this is taught. This feature provides the desired separation between signals, while maintaining a cost and space effective single processing path. Reconsideration is respectfully requested. Claims 23-27, which depend from Claim 22, are submitted as being allowable based on their dependence from an allowable independent claim.

SUMMARY

Applicants assert that Claims 1-27 are in a condition for allowance and respectfully requests a notice as to the same. If any matters remain outstanding, the Examiner is invited to contact the undersigned by telephone.

Dated: _____

11/24/08

By: _____

Respectfully submitted,

C. Miller
Chad W. Miller

Registration No. 44,943

Weide & Miller, Ltd.

7251 West Lake Mead Blvd., Suite 530

Las Vegas, NV 89128

(702)-382-4804 (Pacific Time)